

**I. REMARKS**

The Office Action dated September 19, 2006, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 1-20 are pending.

No amendments to the specification or claims are made by this Response.

Claims 1-20 have been rejected under 35 U.S.C. § 103(a) over Kruecke et al. (U.S. Patent No. 6,080,799) in view of Moore et al. (U.S. Patent No. 5,658,962).

Applicants traverse the rejection.

The presently claimed invention is directed to “[c]ompositions of fluids for preparing polymeric foams, comprising: HFC 365mfc from 5 to 8 parts by weight/100 part of polymeric foam; [and] one or more fluorinated compounds, liquid at room temperature and having boiling point from 50°C to 150°C, and having formula R'-R<sub>F</sub>-R (I)...” (claim 1) (emphasis added).

Applicants submit that the technical problem addressed by the presently claimed invention is to have available mixtures comprising HFC 365mfc, to be utilized in substitution of HFC 141b, to obtain polymeric foams, in particular polyurethane foams, having improved properties in regard to maintenance in time of the thermoinsulating properties, in particular thermal conductivity (see page 4, lines 17-22 of the present specification).

Applicants submit that in contrast to the presently claimed invention, Kruecke et al. merely discloses “mixtures... [that] contain or consist of 50 to 99% by weight of 1,1,1,3,3-pentafluorobutane (HFC 365 mfc) and 1 to 50% by weight of at least one fluorinated hydrocarbon selected from the group consisting of 1,1,1,2-tetrafluoroethane,

1,1,1,3,3-pentafluoropropane, 1,1,1,3,3,3-hexafluoropropane, and 1,1,1,2,3,3,3-heptafluoropropane” (Kruecke et al., col. 1, lines 54-60) (emphasis added).

Specifically, Kruecke et al. discloses that “the blowing agents may, if desired, contain fluorinated hydrocarbons such as 1,1,1,2-tetrafluoroethane, 1,1,1,3,3-pentafluoropropane, 1,1,1,3,3-pentafluorobutane, or 1,1,1,3,3,3-hexafluoropropane” (Kruecke et al., col. 1, lines 32-36) (emphasis added).

Applicants submit that Kruecke et al. does not disclose the fluorinated hydrocarbons of the presently claimed invention. As such, Applicants submit that Kruecke et al. does not teach or suggest the presently claimed invention, and it does not address the technical problem of having mixtures comprising HFC 365mfc to obtain polymeric foams having improved properties in regard to maintenance in time of the thermoinsulating properties.

Further, Kruecke et al. discloses “plastic foams, obtained by using the inventive mixtures..., which contain the mixture in closed cells” (Kruecke et al., col. 3, lines 55-57) (emphasis added). Applicants submit that Kruecke et al. discloses to those of ordinary skill in the art that the mixtures of blowing agents of Kruecke et al. already have an acceptable foaming effect, since the “inventive mixtures” are used in “closed cells.” As such, Applicants submit that those of ordinary skill in the art would not be motivated to modify the composition disclosed in Kruecke et al.

Applicants submit that Moore et al. does not satisfy the deficiencies of Kruecke et al. Rather, Moore et al. merely discloses “omega-hydrofluoroalkyl ether compounds [that]... can be used in applications where... CFCs, HCFCs or halons have been used, for example, as... blowing agents or cell size regulators in making polyurethane foam

insulation" (Moore et al., col. 4, lines 4-12) (emphasis added). Further, Applicants submit that according to the present invention, only a selected class of hydrofluoroethers of formula (I), those having a boiling point from 50°C to 150°C, are suitable for combination with HFC 365mfc in order to solve the technical problem of the present invention. In contrast, Moore et al. teaches hydrofluoroethers having a wide range of boiling points, from 40°C (Moore et al., col. 14, line 66) to 195°C (Moore et al., col. 18, line 51). Applicants submit that Moore et al. does not teach or suggest combining a hydrofluoroether having a "boiling point range of 50°C to 150°C" with hydrofluorocarbon (HFC), much less with HFC 365mfc (claim 1).

Applicants have surprisingly and unexpectedly found that polymeric foams prepared with compositions of the presently claimed invention, which comprise HFC 365mfc and one or more fluorinated compounds, liquid at room temperature and having boiling point from 50°C to 150°C, have lower thermal conductivity than polymer foams having as a foaming agent HFC 365mfc alone. Further, Applicants have found that the improvement in thermal conductivity value is maintained over time.

This is shown in Table II of the specification, which compares the thermal conductivity values of foams having as a foaming agent HFC 365mfc alone (Example 1) to foams made with compositions of the presently claimed invention (Examples 2-6). As shown in the table, foams having HFC 365mfc alone have a higher thermal conductivity value of 23.4 after one day, compared the foams made with compositions of the presently claimed invention (HFC 365mfc and one or more fluorinated compounds), which have lower thermal conductivity values of 22.8-23.0. In addition, over time, the foams made with compositions of the presently claimed invention

maintain lower thermal conductivities compared to the foams having HFC 365mfc alone. For example, after 1, 2, 3, 4, 5, 6, 8, 11, 12, 15, 21, 28 and 35 days, the foams made with compositions of the presently claimed invention consistently have been found to have lower thermal conductivities (Table II, specification).

Further, Applicants submit that it has been surprisingly and unexpectedly found that the fluorinated compounds having boiling points of 50°C to 150°C do not act as blowing agents in foam formation. This is shown in Comparative Example 7 of the specification, wherein after a perfluoropolyether having a boiling point of 125°C (H-Galden<sup>®</sup> C), is added, the “liquid mixture... did not produce foam” (specification, page 20, line 5). In addition, Applicants have found that the foams made with compositions of the presently claimed invention (Example 2-6) did not have a significant difference in cell size of the formed foams, compared to the foams obtained by using HFC 365mfc alone (see specification, page 19, lines 14-17). Applicants submit that if the foams containing the fluoroethers had participated in the blowing effect, then the total mole amount of gases would have been higher, and a corresponding variation in cell size would be expected.

Applicants disagree with the Examiner's assertion that “it would have been obvious for one having ordinary skill in the art to have employed the blowing agents of Moore et al. in the preparations of Kruecke et al. for the purpose of imparting their acceptable blowing and cell regulating effect in order to arrive at the products and/or processes of applicants' claims...” (Office Action, page 3, lines 7-11). Rather, Applicants submit that one of ordinary skill in the art would not have been motivated to combine the HFC 365mfc of Kruecke et al. with the hydrofluoroalkyl ethers of Moore et

al., which are used as blowing agents. Applicants submit that one of skill in the art reviewing Kruecke et al. and searching for a further blowing agent to be used in an admixture with HFC 365mfc would likely have been led away from the presently claimed invention, as the hydrofluoroethers of Formula (I), as discussed above, do not function as blowing agents when employed in mixtures with HFC 365mfc.

Further, Applicants submit that one of ordinary skill in the art would not have been motivated to combine Kruecke et al. with Moore et al. for the purpose of imparting cell regulating effects, as in Kruecke et al., the following substances are mentioned as cell regulators in polymeric foams: paraffin, fatty alcohols, or polydimethylsiloxanes (Kruecke et al., col. 3, lines 26-27). Further, Applicants submit that the other cell regulator additives that are well known in the art are surfactants. See enclosed, U.S. Patent Publication No. 2003/0181536, paragraph [0004].

Applicants submit that without the benefit of hindsight, one of ordinary skill in the art would not have been motivated to select specific fluorinated compounds having a boiling point from 50°C to 150°C out of the group of fluorinated compounds disclosed in Moore et al., and combine them with the HFC 365mfc disclosed in Kruecke et al.

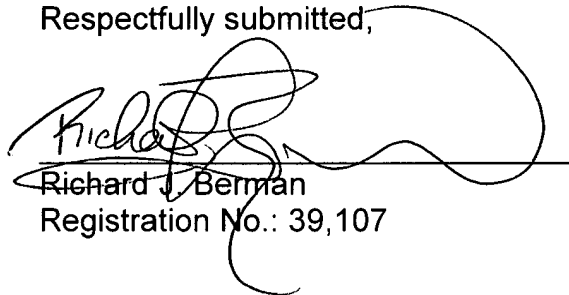
For at least the above reasons, Applicants submit that Kruecke et al. and Moore et al. do not teach or suggest all of the elements of the presently claimed invention. As such, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-20 under 35 U.S.C. § 103(a) over Kruecke et al. in view of Moore et al.

II. **CONCLUSION**

In view of the amendments and remarks above, Applicants respectfully submit that this application is in condition for allowance and request favorable action thereon. Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' representatives at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. The Commissioner is authorized to charge payment for any additional fees that may be required with respect to this paper or credit any overpayment to Counsel's Deposit Account 01-2300, making reference to Attorney No. **108910-00121**.

Respectfully submitted,



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Enclosure: U.S. Patent Publication No. 2003/0181536  
One (1) month Petition for Extension of Time